WHAT IS CLAIMED IS:

1. A cold cathode light emitting device emitting light by electrons extracted from a cold cathode, comprising:

a plurality of first electrodes;

a plurality of insulating layers laminated in said plurality of first electrodes;

a plurality of second electrodes provided on said plurality of insulating layers to intersect said plurality of first electrodes with said plurality of insulating layers interposed therebetween, for extracting electrons from said plurality of first electrodes; and

a third electrode opposed to said plurality of second electrodes for emitting light upon receipt of said electrons, with a voltage for accelerating said electrons being applied between said third electrode and said plurality of first electrodes, wherein

at least one hole is provided at intersections of said plurality of first electrodes and said plurality of second electrodes to extend through said plurality of second electrodes and said plurality of insulating layers to reach a surface of said plurality of first electrodes,

said at least one hole has a first diameter d1 at a position where said plurality of insulating layers are in contact with said plurality of first electrodes and a second diameter d2 at a position where said plurality of insulating layers are in contact with said plurality of second electrodes, where d2 is greater than d1, and

a nanofiber-structure layer is provided on said plurality of first electrodes in an opening portion having said first diameter d1 in said at least one hole.

2. The cold cathode light emitting device according to claim 1, wherein

assuming that said hole is divided into a first section corresponding to a

lowermost insulating layer of said plurality of insulating layers being in contact with said plurality of first electrodes, a second section corresponding to the remainder of said plurality of insulating layers located over said lowermost insulating layer and a third section corresponding to said plurality of second electrodes,

said hole has said diameter d1 in said first section, said diameter d2 at an upper part of said second section, and a third diameter dm at a lower part of said second section, where dm is greater than d2.

3. The cold cathode light emitting device according to claim 1, wherein

assuming that said hole is divided into a first section corresponding to a lowermost insulating layer of said plurality of insulating layers being in contact with said plurality of first electrodes, a second section corresponding to the remainder of said plurality of insulating layers located over said lowermost insulating layer and a third section corresponding to said plurality of second electrodes,

said hole has said first diameter d1 in said first section and a diameter in said second section which decreases to taper toward said plurality of second electrodes.

4. The cold cathode light emitting device according to claim 1, wherein

assuming that said hole is divided into a first section corresponding to a lowermost insulating layer of said plurality of insulating layers being in contact with said plurality of first electrodes, a second section corresponding to the remainder of said plurality of insulating layers located over said lowermost insulating layer and a third section corresponding to said plurality of second electrodes,

said hole has said first diameter d1 in said first section and a constant diameter substantially equal to said second diameter d2 throughout said second section.

5. The cold cathode light emitting device according to claim 1, wherein

assuming that said hole is divided into a first section corresponding to a lowermost insulating layer of said plurality of insulating layers being in contact with said plurality of first electrodes, a second section corresponding to the remainder of said plurality of insulating layers located over said lowermost insulating layer and a third section corresponding to said plurality of second electrodes,

said hole has said first diameter d1 in said first section and a diameter in said second section which increases to flare toward said plurality of second electrodes.

6. The cold cathode light emitting device according to claim 1, wherein

an insulating layer located over a lowermost insulating layer of said plurality of insulating layers being in contact with said plurality of first electrodes has the same pattern configuration as said plurality of second electrodes.

7. The cold cathode light emitting device according to claim 1, wherein

a lowermost insulating layer of said plurality of insulating layers being in contact with said plurality of first electrodes is a deposited insulating layer in which insulative films are deposited.

8. The cold cathode light emitting device according to claim 1, wherein

a lowermost insulating layer of said plurality of insulating layers being in contact with said plurality of first electrodes is formed by firing a paste material made of resin containing glass powder dispersed therein.

9. The cold cathode light emitting device according to claim 1, wherein

a lowermost insulating layer of said plurality of insulating layers being in contact with said plurality of first electrodes has a thickness t1, and the remainder of said plurality of insulating layers other than said lowermost insulating layer has a thickness t2, where t1 is smaller than t2.

10. The cold cathode light emitting device according to claim 1, wherein

said plurality of insulating layers are each formed by firing a paste material made of resin containing glass powder dispersed therein, and

a softening point of said glass powder used for said plurality of insulating layers decreases in the order of getting closer to said plurality of second electrodes.

11. An image display comprising a display provided with the cold cathode light emitting device as recited in claim 1.

12. A method of manufacturing the cold cathode light emitting device as recited in claim 1, comprising the steps of:

(a) coating a solvent containing a nanofiber-structure material dispersed therein on a surface of a substrate having said at least one hole formed therein, and drying said solvent to form a dried film; and

(b) spraying polishing particles at a high pressure onto a surface of said dried film containing said nanofiber-structure material to remove an unnecessary part of said dried film.

13. The method according to claim 12, wherein

said polishing particles have a particle diameter ds satisfying such a relation

with said first diameter d1 and said second diameter d2 that d1<ds<d2.

14. A method of manufacturing the cold cathode light emitting device as recited in claim 1, comprising the steps of:

(a) forming said at least one hole in said plurality of second electrodes and said plurality of insulating layers and forming a sacrificial layer which covers said plurality of second electrodes except a portion corresponding to said at least one hole;

(b) coating a solvent containing a nanofiber-structure material dispersed therein on an inner surface of said at least one hole and on a surface of said sacrificial layer, and drying said solvent to form a dried film;

(c) spraying polishing particles at a high pressure onto a surface of said dried film containing said nanofiber-structure material to remove an unnecessary part of said dried film; and

(d) removing said sacrificial layer.

15. The method according to claim 14, wherein

said polishing particles have a particle diameter ds satisfying such a relation with said first diameter d1 and said second diameter d2 that d1<ds<d2.

16. The method according to claim 15, wherein

said sacrificial layer is also used as a mask for forming said at least one hole in said plurality of second electrodes and said plurality of insulating layers.

17. A method of manufacturing the cold cathode light emitting device as recited in claim 1, comprising the steps of:

(a) forming a lowermost insulating layer of said plurality of insulating layers on said plurality of first electrodes;

(b) selectively removing said lowermost insulating layer to form said opening portion which constitutes a lower part of said at least one hole on the side of said plurality of first electrodes;

(c) coating a solvent containing a nanofiber-structure material dispersed therein on an inner surface of said opening portion and a surface of said lowermost insulating layer, and drying said solvent to form a dried film; and

(d) planarizing said dried film containing said nanofiber-structure material to remove said dried film except a part thereof present in said opening portion.